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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,905	01/31/2005	Harry Richard Claringburn	P/62303	1397

156 7590 12/03/2008

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EXAMINER	
LIU, LI	

ART UNIT	PAPER NUMBER
2613	

MAIL DATE	DELIVERY MODE
12/03/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/500,905	CLARINGBURN ET AL.	
	Examiner	Art Unit	
	LI LIU	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/23/2008 has been entered.

Response to Arguments

2. Applicant's arguments filed on 9/23/2008 have been fully considered but they are not persuasive.

1). Applicant's argument – "Each independent claim was amended by specifying in more detail the characteristics of the channels ...". "Basis for this amendment can be derived from page 4, lines 7-12 of the PCT publication". "Basis for replacing "or" with "and" can be found on page 3, lines 17-19 of the PCT publication". "There is nothing in Caroli's disclosure that would show or suggest blocking of channels to be added if the channels do not carry any signal to be added".

Examiner's response – Here is what the applicant discloses in "page 3, lines 17-19" of the specification: "In its broadest form the invention overcomes the problem by filtering out the EDFA noise on signal paths which have no add content and controlling the signal amplitude of the added signals after amplification". And in the detailed description, applicant also state "the multiplexer demultiplexer and VOA array is used to

block noise on channels that are not being added or used to control the added channels" (emphasis added) (page 6, line 22-24).

According to applicant disclosure, suppose there four signal paths (or channels) Ch1 – Ch4 in the system, and four variable optical attenuators (VOA1 – VOA4) are responsible for the four signal paths (or channels). While the channel Ch2 do not carry any signal to be added to the network, as shown in the position Ch2 in the following Figure O1, the signal path Ch2 has "no add content", and Ch2 in the signal path of the VOA2 has no any signal, or the channel Ch2 has no any wavelength signal. However, since the optical amplifier (e.g., 132 in Figure 2 or 140 in Figure 4 of applicant) is positioned before the VOA array, there is amplifier noise around the spectral position of Ch 2. That is, the "channel" (or signal path) Ch 2 carries amplifier noise, but does not have any signals to be added to the network. Then, the channel (Ch 2 in Figure O1), which has only noise, is blocked by the VOA2; and then the amplifier noise are filtered or blocked, and "improving or optimising the add channel OSNR" (page 3 line 14-15).

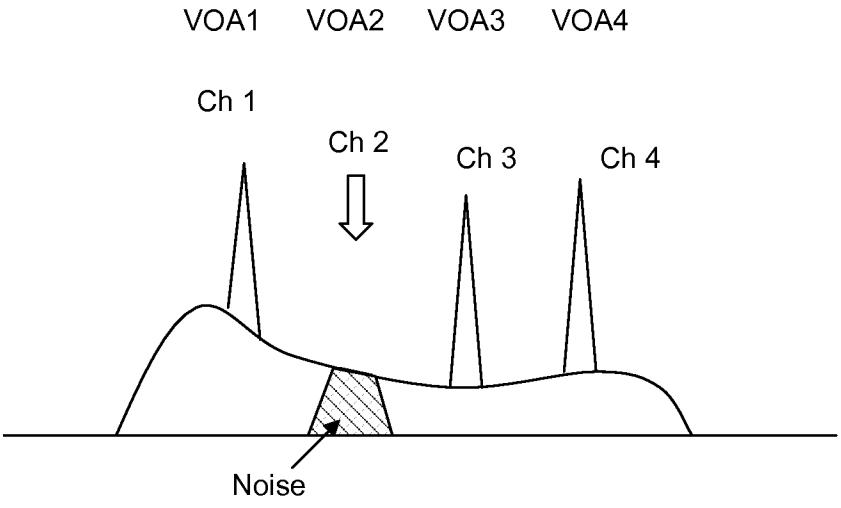

Figure O1

That is, the “blocking of channel” is to block noise in the signal path (or channel) since the "channel" has "no add content", and no corresponding wavelength signal is present in the “channel” or signal path.

Caroli et al teaches the system and method for blocking of channels to be added if the channels do not carry any signal to be added and controlling an amplitude of the added signals (e.g., Figures 4 and 5), “[f]or example, wavelength blocker 440 is configured or otherwise provisioned, e.g., via remote software-based control, to block those wavelengths corresponding to optical channels not being added at node 415 while passing the wavelengths of those optical channels being added at node 415. Wavelength blocker 440 provides an added benefit by minimizing amplified spontaneous emission (ASE) noise that may be generated by optical amplifier 438. Again, wavelength blocker 440 may also include a dynamic gain equalization function (DGEF) to provide a per-channel gain equalization capability so that the power of the optical channels being added can be maintained at a level approximately equal to the average of the power of the optical channels in "through" path 426” ([0048]).

That is, Caroli's disclosure “show or suggest blocking of channels to be added if the channels do not carry any signal to be added”.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 9, 12 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Caroli et al (US 2003/0002104).

1). With regard to claims 9 and 12, Caroli discloses a dense wavelength division multiplexing (DWDM) optical communications network having a plurality of nodes (Figures 1 and 4, the ADD/DROP nodes) for an n-channel dense wavelength division multiplexing (DWDM) optical network (Figures 1 and 4, N channels are added or dropped), each node comprising: an add path (e.g., 431 in Figure 4) for adding an n-channel wavelength multiplex onto the network, some of the n-channels carrying signals to be added onto the network (e.g., Figure 4, some of the N channels are added, [0048]), the add path including an n signal channel combiner (e.g., MUX 435, 436 and combiner 437 in Figure 4) for combining the n-channel signals, an optical amplifier (e.g., the amplifier 438 in Figure 4) for amplifying an output of the signal combiner, a multichannel wavelength selective filter (e.g., the wavelength blocker/dynamic gain equalization function: λ-BLOCKER/DGEF 440 in Figure 2) with variable-per-channel attenuation (DGEF in the wavelength blockers, the DGEF provides a per-channel gain equalization capability, [0048]) for blocking channels to be added to the network if the channels do not carry any signals to be added to the network ([0048], the wavelength blocker 440 is configured to block those wavelengths corresponding to optical channels not being added at node 415 while passing the wavelengths of those optical channels

being added at node 415. That is, for “those optical channels not being added at node 415”, the corresponding channels or signal paths in the λ-BLOCKER/DGEF do not carry any signals, except noise. Then, those channels are blocked in the channel/signal path of the blocker/DGEF to be added to the network) and controlling an amplitude of the added signals ([0048], DGEF provides a per-channel gain equalization capability so that the power of the optical channels being added can be maintained at a level approximately equal to the average of the power of the optical channels in "through" path 426), and an add coupler for coupling the add path to the network (e.g., the combiner 430 in Figure 4).

2). With regard to claim 13, Caroli discloses a method of adding an n-channel dense wavelength division multiplexing (DWDM) signal to an n-channel DWDM optical network (Figures 1 and 4, N channels are added or dropped), comprising the steps of: combining (e.g., MUX 435, 436 and combiner 437 in Figure 4) the signals from a plurality of signal sources (e.g., λ1 to λN in Figure 4) to provide an n-channel add signal combined output signal (the multiplexed signal from combiner 437); amplifying the combined output signal (the amplifier 438 in Figure 4); using a multichannel wavelength selective filter with variable-per-channel attenuation (e.g., the wavelength blocker/dynamic gain equalization function: λ-BLOCKER/DGEF 440 in Figure 2; the DGEF in the wavelength blockers provides a per-channel gain equalization capability, [0048]) to selectively block channels of the combined output signal to be added to the network if the channels do not carry any signals to be added to the network ([0048], the wavelength blocker 440 is configured to block those wavelengths corresponding to

optical channels not being added at node 415 while passing the wavelengths of those optical channels being added at node 415. That is, for “those optical channels not being added at node 415”, the corresponding channels or signal paths in the λ-BLOCKER/DGEF do not carry any signals, except noise. Then, those channels are blocked in the channel/signal path of the blocker/DGEF to be added to the network) and to control an amplitude of the added signals ([0048], DGEF provides a per-channel gain equalization capability so that the power of the optical channels being added can be maintained at a level approximately equal to the average of the power of the optical channels in "through" path 426), and coupling the n-channel add signal onto the optical network (e.g., the combiner 430 in Figure 4 couples the N-channel add signal onto the optical network).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 10, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caroli et al (US 2003/0002104) in view of Claringburn et al (EP 1156607).

1). With regard to claim 10 and 15, Caroli et al disclose all of the subject matter as applied to claims 9 and 13 above. And Caroli et al further discloses wherein the variable attenuator on any given channel is set to block the signal on that channel if no

signal on that channel is to be added onto the network, and to control the amplitude of the added signals, and a variable optical attenuator arranged within the wavelength blockers ([0048]).

But, in Figure 4, Caroli et al does not expressly show "the multichannel wavelength selective filter includes an n-channel demultiplexer having n outputs, an n-channel multiplexer having n inputs, and the variable optical attenuator is arranged between each of the demultiplexer outputs and multiplexer inputs".

Although Caroli et al does not expressly show the demultiplexer and multiplexer inputs in the wavelength selective filter, it is obvious that an n-channel demultiplexer and an n-channel multiplexer are present in the wavelength blocker. Caroli et al teaches that the λ-BLOCKER/DGEF wavelength blockers can block some specific wavelengths and pass other wavelengths and incorporate a dynamic gain equalization function (DGEF) to provide a per-channel gain equalization capability so that the power of the optical channels being added can be maintained at a level approximately equal to the average of the power of the optical channels in "through" path ([0048]). Therefore, it is obvious that an n-channel demultiplexer and an n-channel multiplexer is present in the wavelength blockers and the attenuator/DGEF must be arranged between each of the demultiplexer outputs and multiplexer inputs so that the multiplexed signal can be demultiplexed and the individual channel can be dynamically controlled (per-channel) by the DGEF.

Claringburn et al, in the same field of endeavor, teaches such a multichannel wavelength selective filter (Figure 1, the channel control unit CCU 50), which includes

an n-channel demultiplexer (the Demux 300 in Figure 1) having n outputs, an n-channel multiplexer the Mux 330 in Figure 1) having n inputs, and the variable optical attenuator (the CELL array 310 in Figure 1) is arranged between each of the demultiplexer outputs and multiplexer inputs.

Therefore, it would also have been obvious to one of ordinary skill in the art at the time the invention was made to apply the same structure as taught by Claringburn et al to the system of Caroli et al so that the individual channels can be controlled and processed, and signal to noise ratio can be increased.

2). With regard to claim 16, Caroli et al and Claringburn et al disclose all of the subject matter as applied to claims 13 and 15 above. And Caroli et al further discloses wherein the non-signal carrying channels are blocked by attenuating to zero the outputs from the demultiplexer corresponding to those channels ([0048], the channels not carrying signal are blocked, that is, the outputs from the demultiplexer corresponding to those channels are attenuated to zero, and the ASE noise at corresponding channel position is also filtered; also refer to [0031] and [0032]. Note, Claringburn et al also teaches to use the attenuating means to block radiation components).

7. Claim 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caroli et al (US 2003/0002104) in view of Corio (US 5,436,921).

Caroli et al disclose all of the subject matter as applied to claims 9 and 13 above. But, Caroli et al does not expressly state the optical network node comprising means for running sources for generating the n-channel signals at maximum power, or running the

signal sources at full power to optimize an optical signal-to-noise ratio of the signals added to the network.

However, Corio teaches a power control system and method (e.g., Figure 2), wherein the running source (e.g., the Laser Diode 12) generates the light signal at maximum power (column 2 line 22-23, and column 5 line 35-36, and column 6 line 28-29), and then an attenuator (e.g., 18 in Figure 2) is used to control the power output from the attenuator to a desired level.

Caroli et al teaches that the wavelength blocker with variable-per-channel attenuation (DGEF) blocks channels not carrying signals to be added to the network and controlling an amplitude of the added signals, and minimizing amplified spontaneous emission ASE noise, and then the signal to noise ratio is increased. If the sources are running below a predetermined level, the DGEF or attenuator would not participate in the controlling, and the desired power level may not be obtained.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the power control scheme as taught by Corio to the system of Caroli et al so that the signal source is run at full power, and then gain equalizer/attenuator can perform the full function to conveniently control the output power to a desired level, and the desire SNR can be obtained.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LI LIU whose telephone number is (571)270-1084. The examiner can normally be reached on Mon-Fri, 8:00 am - 5:30 pm, alternating Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571)272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. L./
Examiner, Art Unit 2613
November 26, 2008

/Kenneth N Vanderpuye/
Supervisory Patent Examiner, Art Unit 2613